

Appl. No. 09/818,263
Amendment dated October 28, 2003
Reply to Office Action of May 28, 2003

Attorney Docket No. 81751.0011
Customer No. 26021

REMARKS/ARGUMENTS

This application has been carefully reviewed in light of the Office Action dated May 28, 2003. Claims 1-4, 8-13 and 18-21 are pending in the application. Claims 1, 10 and 18 are the independent claims. Claims 5-7 and 14-17 have been canceled without prejudice. Claims 1, 8-10 and 18 have been amended. Claims 19-21 are the new claims. It is believed that no new matter is involved in the amendments or arguments presented herein.

Reexamination and reconsideration of the amendment in the application are respectfully requested.

Interview with the Examiner

Applicant thanks the Examiner for the courtesies extended during the telephone interview of June 16, 2003.

Non-Art Based Rejections

Claims 7, 8 and 16 were rejected under 35 U.S.C. § 112, for insufficient antecedent basis. In response, Applicant has canceled Claims 7 and 16 and amended Claim 8 in order to make the above rejection moot. Reconsideration and withdrawal of the above § 112 rejections are respectfully requested.

Art-Based Rejections

Claims 1, 2, 6, 9-11, 15 and 18 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,774,099 (Iwasaki); Claims 1, 2, 6-11, and 15-18 were rejected under §102(b) over EP Patent Application Number 0,558,059 (Ishizaki); Claims 3-5 and 12-14 were rejected under §103(a) over Ishizaki in light of U.S. Patent No. 4,393,380 (Hosokawa). Applicant respectfully traverses the rejections and submits

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that the claims herein are patentable in light of the amendments above and the arguments presented below.

The Iwasaki Reference

Iwasaki is directed to a liquid crystal device for driving a liquid crystal by an electric field generally in parallel with a substrate plane (*See, Iwasaki, abstract*). Iwasaki discloses that electrode lines 5, 6 are connected to power circuit (*See, Iwasaki, Fig. 1*). Iwasaki discusses waveform diagrams of drive voltages when odd row and even row pixels are driven. Accordingly, when an even frame period comes, the odd row common voltage is inverted in polarity (*See, Iwasaki, Col. 14, lines 1-4*).

The Ishizaki Reference

Ishizaki concerns a liquid crystal display including a liquid crystal sealed between a pair of substrates (*See, Ishizaki, abstract; Col. 3, lines 1-3*). According to Ishizaki the opposite electrodes are inverted and driven by the potential controlling device on the same substrate as the opposite electrodes (*See, Ishikazi, abstract; Col. 3, lines 17-30*).

The Hosokawa Reference

The ancillary Hosokawa reference is directed to a matrix liquid crystal display circuit (*See, Hosokawa, abstract*). Hosokawa teaches the use of a common driver with a shift register for performing a memory function (*See, Hosokawa, Col. 7 line 35 to Col. 98, line 8*).

The Claims are Patentable Over the Cited References

The cited references fail to teach or suggest the recitations of claim 18. In particular, the cited references fail to teach or suggest, for example, "a polarity

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inversion driving circuit, inverting a polarity of a voltage applied to the liquid crystal layer, which is formed between the pixel electrodes and the opposite electrode, by changing a voltage supplied to an opposite electrode of a row corresponding to the selected scanning line in each of the subfields, as required by amended independent Claim 18.

In rejecting claim 18, the Office Action states, "Iwasaki et al teaches ...a polarity inverting circuit 64." Applicant respectfully traverses this statement. As discussed during the interview, and as shown in FIG. 1, Iwasaki discloses that electrode lines 5, 6 are connected to power circuit 64. However, the inputs to power circuit 64 are not described. The cited portion of Iwasaki (Col. 13, line 26 - Col. 14, line 51,) discusses waveform diagrams of drive voltages when odd row and even row pixels are driven. In particular, Col. 14, lines 1-4 discuss that "when an even frame period comes, the odd row common voltage 39 is inverted in polarity from Vcomh to Voml."

Accordingly, Iwasaki merely discloses that the polarity of the voltages Vcomh, Voml are changed. Iwasaki does not disclose or suggest "a polarity inversion driving circuit, inverting a polarity of a voltage applied to the liquid crystal layer, which is formed between the pixel electrodes and the opposite electrode, by changing a voltage supplied to an opposite electrode of a row corresponding to the selected scanning line in each of the subfields," as required by amended independent Claim 18.

Moreover, Iwasaki fails to disclose or suggest "converting a data signal to a binary signal by a signal control circuit in each of the subfields," as required by amended independent Claim 18.

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Also, Iwasaki does not teach or suggest "supplying a binary voltage to a plurality of pixel electrodes based on the binary signal from the signal control circuit by data line driving circuit through N columns of data lines and a plurality of switching elements connected to the at least one selected scanning line," as required by amended independent Claim 18

Similarly, amended independent Claim 18 is patentable over the Ishizaki reference. Ishizaki concerns a liquid crystal display including a liquid crystal sealed between a pair of substrates (See, *Ishikazi, abstract; Col. 3, lines 1-3*). Ishizaki teaches that the opposite electrodes are inverted and driven by the potential controlling device on the same substrate as the opposite electrodes (See, *Ishikazi, abstract; Col. 3, lines 17-30*). According to Ishizaki, the potentials of the opposite electrode sections are inverted per frame or by line (See, *Ishizaki, Col. 5, line 30 to Col. 6, line 2*). In contrast, amended independent Claim 18 requires "a polarity inversion driving circuit, inverting a polarity of a voltage applied to the liquid crystal layer, which is formed between the pixel electrodes and the opposite electrode, by changing a voltage supplied to an opposite electrode of a row corresponding to the selected scanning line in each of the subfields." This results in a more efficient operation and less power consumption for the present invention compared to that of the prior art. (See application, page 29, lines 11-15.)

Moreover, Ishizaki fails to disclose or suggest "converting a data signal to a binary signal by a signal control circuit in each of the subfields," as required by amended independent Claim 18.

Also, Ishizaki does not teach or suggest "supplying a binary voltage to a plurality of pixel electrodes based on the binary signal from the signal control circuit by data line driving circuit through N columns of data lines and a plurality of

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switching elements connected to the at least one selected scanning line," as required by amended independent Claim 18.

The ancillary Hosokawa reference fails to remedy the above deficiencies of Ishizaki. Since the applied art of record fails to disclose, teach or suggest the above features recited in amended independent Claim 18, it cannot be said to either anticipate or render obvious the invention which is the subject matter of that claim.

Accordingly, amended independent Claim 18 is believed to be in condition for allowance and such allowance is respectfully requested.

Applicant also submits that amended independent claims 1 and 10 are also patentable over the applied references for at least the same reasons as those discussed above in connection with amended independent Claim 18.

The remaining claims depend either directly or indirectly from amended independent Claims 1, 10 and 18, and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance

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If there are any fees due in connection with the filing of this response, please
charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: October 28, 2003

By: *Darius G. Adli*
Darius G. Adli
Registration No. 51,386
Attorney for Applicant(s)

500 South Grand Avenue, Suite 1900
Los Angeles, California 90071
Phone: 213-337-6700
Fax: 213-337-6701

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